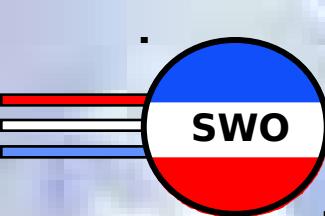




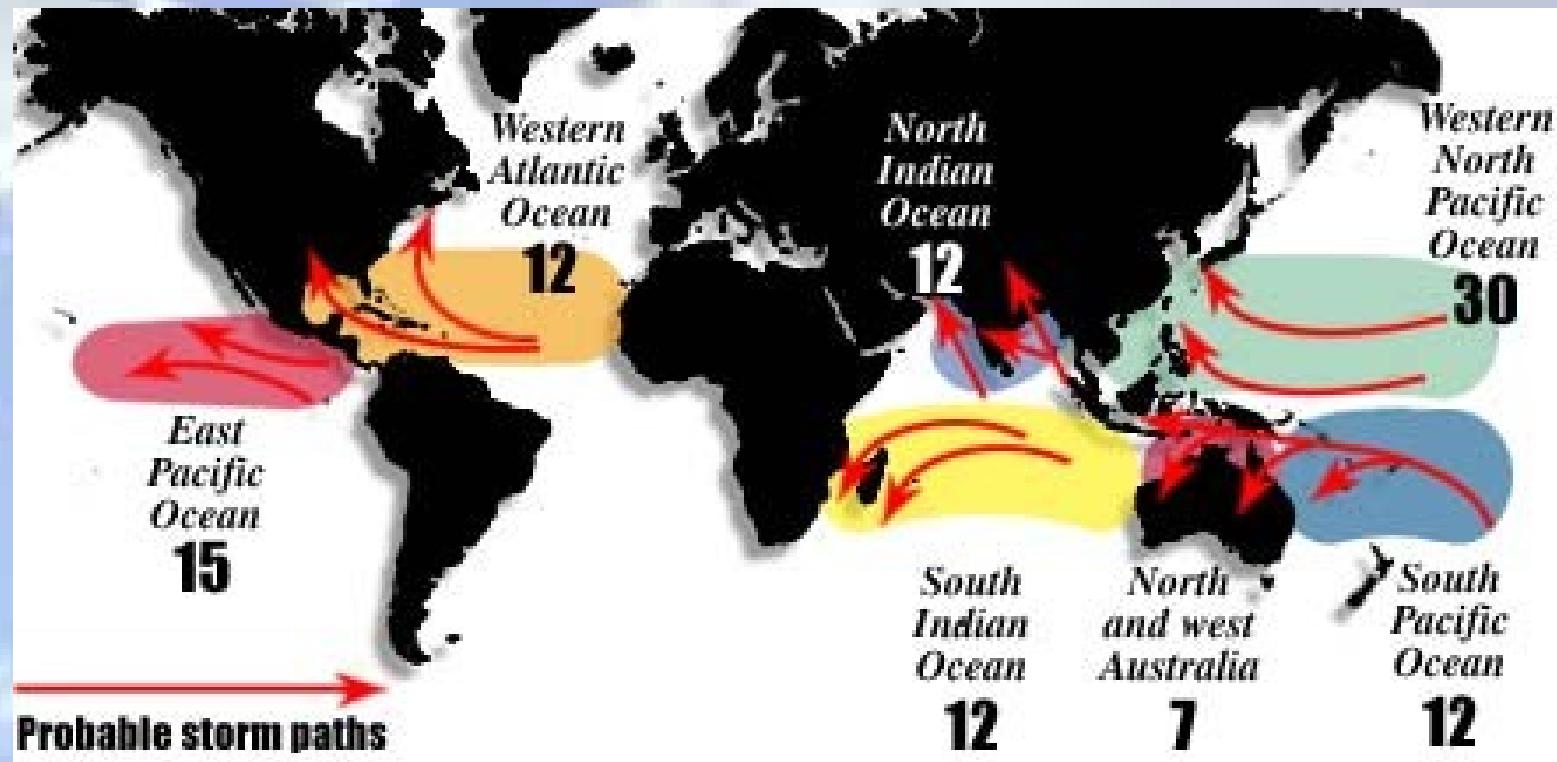
SWO

2005 Hurricane Briefing



Overview

- **US Hurricane History - The costliest, deadliest, the most intense**
- **Atlantic Hurricane Season / Atlantic Basin Formation Areas**
- **US Mainland/Army Posts Strikes Since 1900**
- **Caribbean Hurricanes Since 1900**
- **Saffir-Simpson Hurricane Scale**
- **2004 Atlantic Hurricane Summary**
- **Dr. Gray's 2005 Atlantic Basin Forecast Summary**
- **2005 Atlantic Tropical Storm Names**



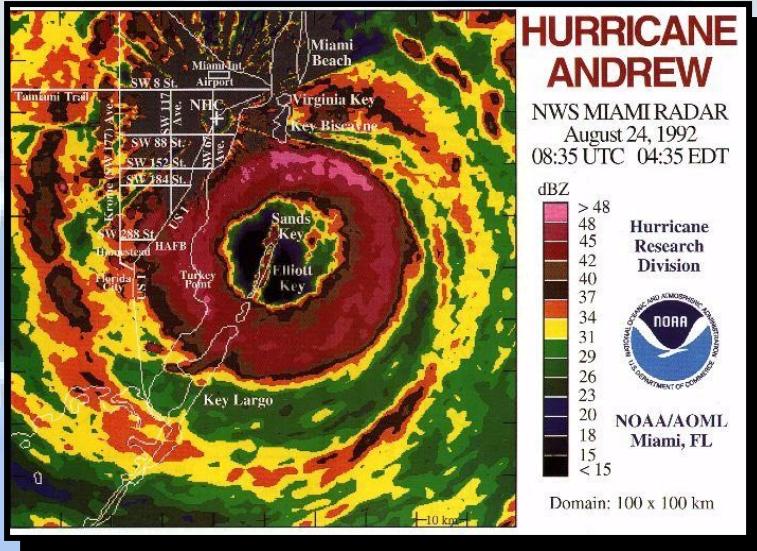
“Every year about 100 tropical cyclones form within seven regions around the world known as basins”

Source: The USATODAY Weather Book by Jack Williams



US Hurricane History

The Costliest



In 1992, Hurricane ANDREW

- Caused an estimated \$25 billion in total damages
- The most expensive natural disaster in US history
- Claimed 65 lives
- Moved from the northwest Bahamas through the south Florida peninsula into south central Louisiana



US Hurricane History

The Deadliest



In 1900, an intense hurricane hit Galveston, Texas

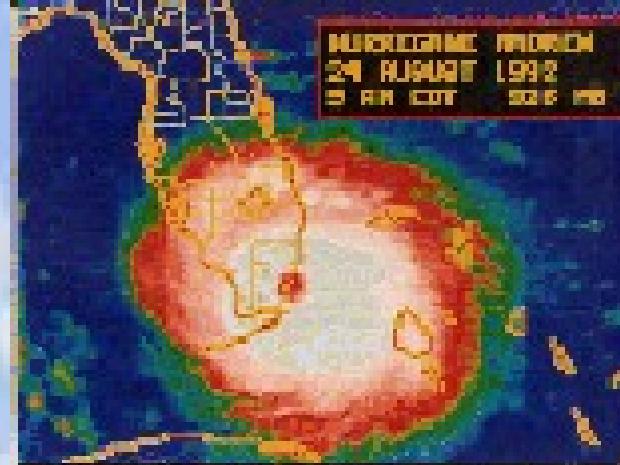
- Claimed approximately 8000 lives
- Actual estimates may have been as high as 10,000 to 12,000



US Hurricane History

The Most Intense

1. In 1935, the Florida keys were struck by the Category 5 "Labor Day" hurricane
2. In 1969, Camille Struck the coast of Mississippi and southeast Louisiana
 - Caused over \$5 billion in damages Claimed 256 lives
 - Winds gusting to 200 mph
3. In 1992, Andrew hit South Florida and SE Louisiana
 - Caused over \$25 billion in damages

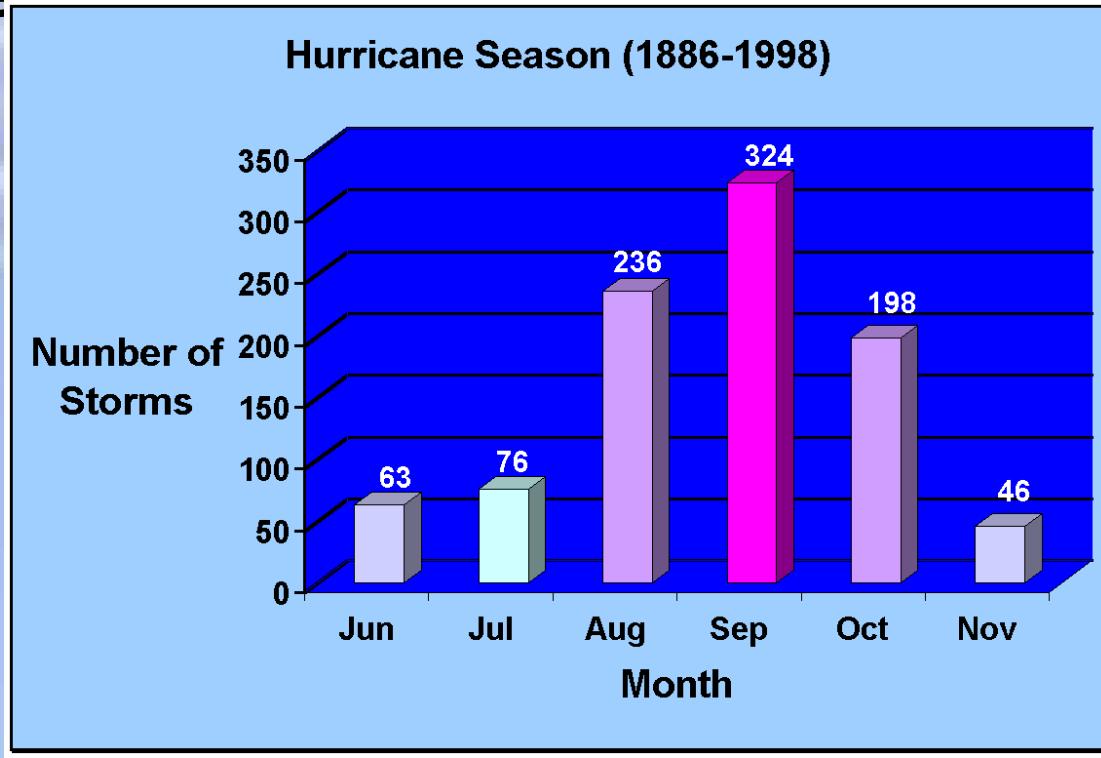




Atlantic Hurricane Season

Season officially begins June 1st and generally lasts through the end of November

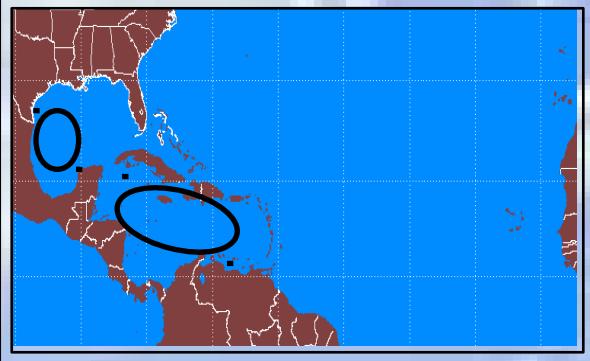
- Majority of storms occur during August and September
- Majority of named storms have a duration of 2 to 10 days
- A hurricane watch is issued when hurricane conditions are possible within 24 to 36 hours
- A hurricane warning is issued when hurricane conditions are expected in 24 hours or less



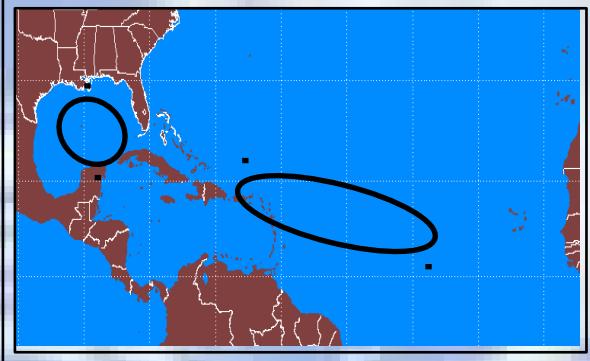
A Tropical Storm becomes a Hurricane when winds reach 74 mph



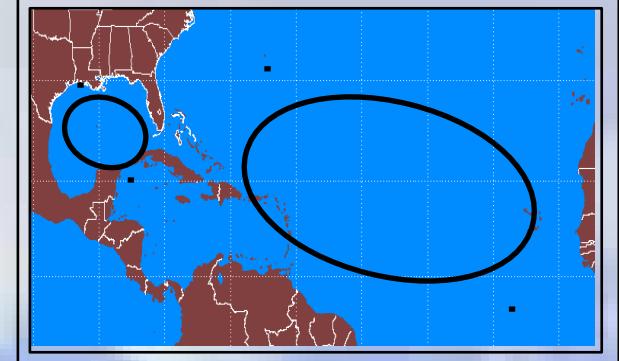
Atlantic Basin Formation Areas By Month (Circa 1985 - 2000)



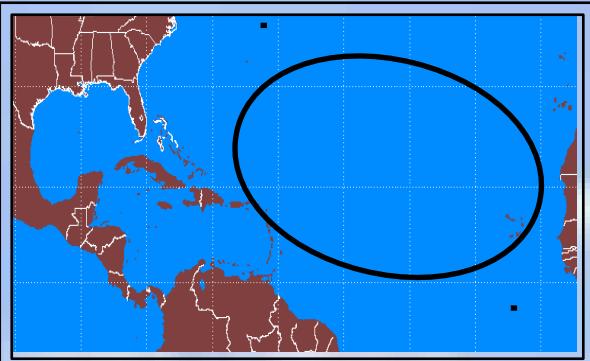
June Average
<1 Storm per Season



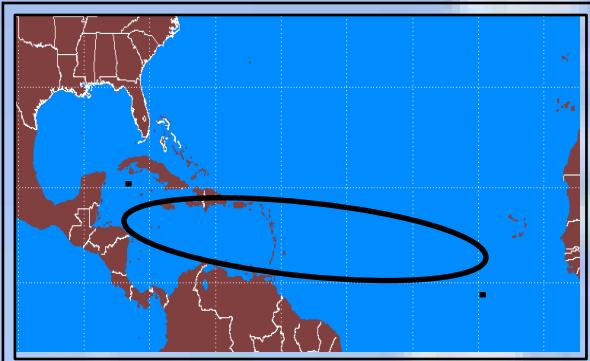
July Average
1 Storm per Season



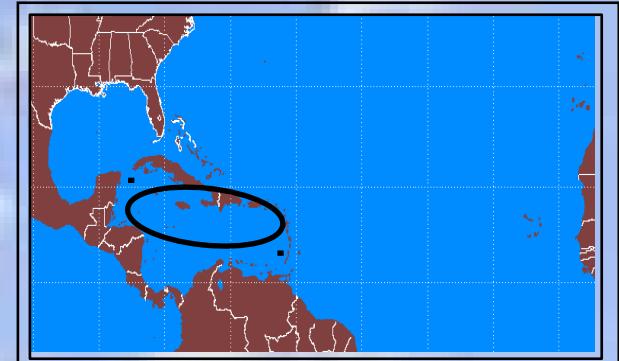
August Average
2.3 Storms per Season



September - Average
3.3 Storms per Season



October- Average
1.5 Storms per Season



November - Average
<1 Storm per Season



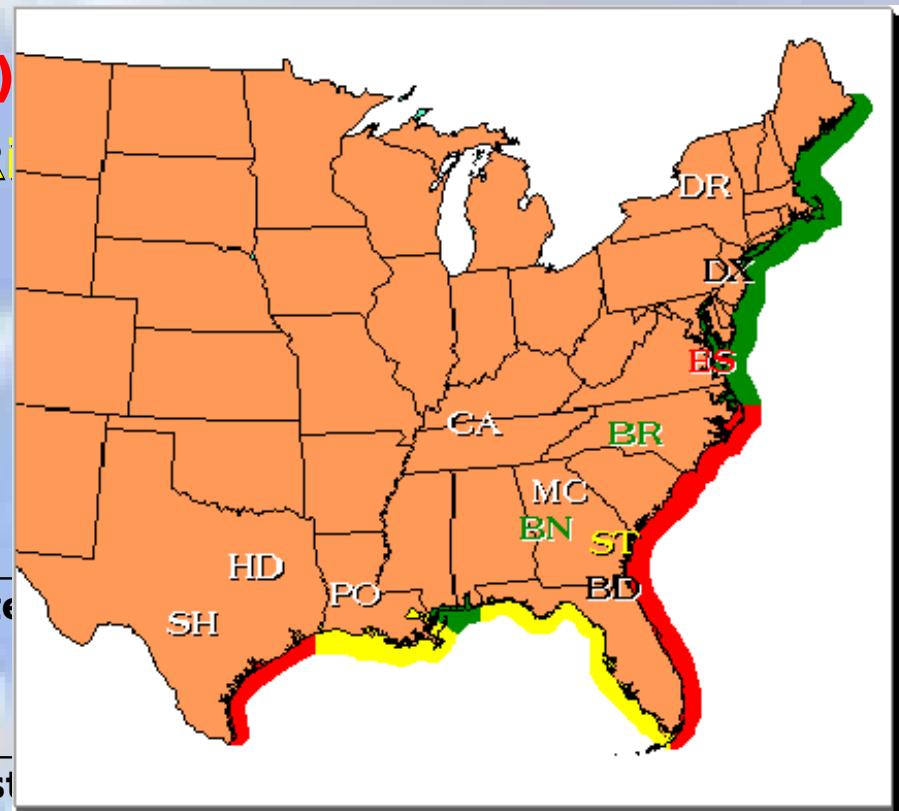
US Mainland/Army Posts Strikes (Since 1900)

Coastal Hurricane Strikes

- > 30 Hurricanes (High Risk)
- 20 - 30 Hurricanes (Medium Risk)
- < 20 Hurricanes (Low Risk)

Regional Army Posts (# Hurricanes within 60 miles of Post)

< 5	5-10	10-15
Ft Sam Houston (SH)	Ft Bragg (BR)	Ft Stewart (ST)
Ft Polk (PO)	Ft Benning (BN)	
Ft McPherson (MC)		
Ft Hood (HD)		
Ft Campbell (CA)	Cp Blanding (BD)	Ft Eustis (EUS)
Ft Drum (DR)	Ft Dix (DX)	





Caribbean Hurricanes (Since 1900)

Number of Hurricanes

Within 60 Miles of Land Mass
> 30 (Red)

21-30

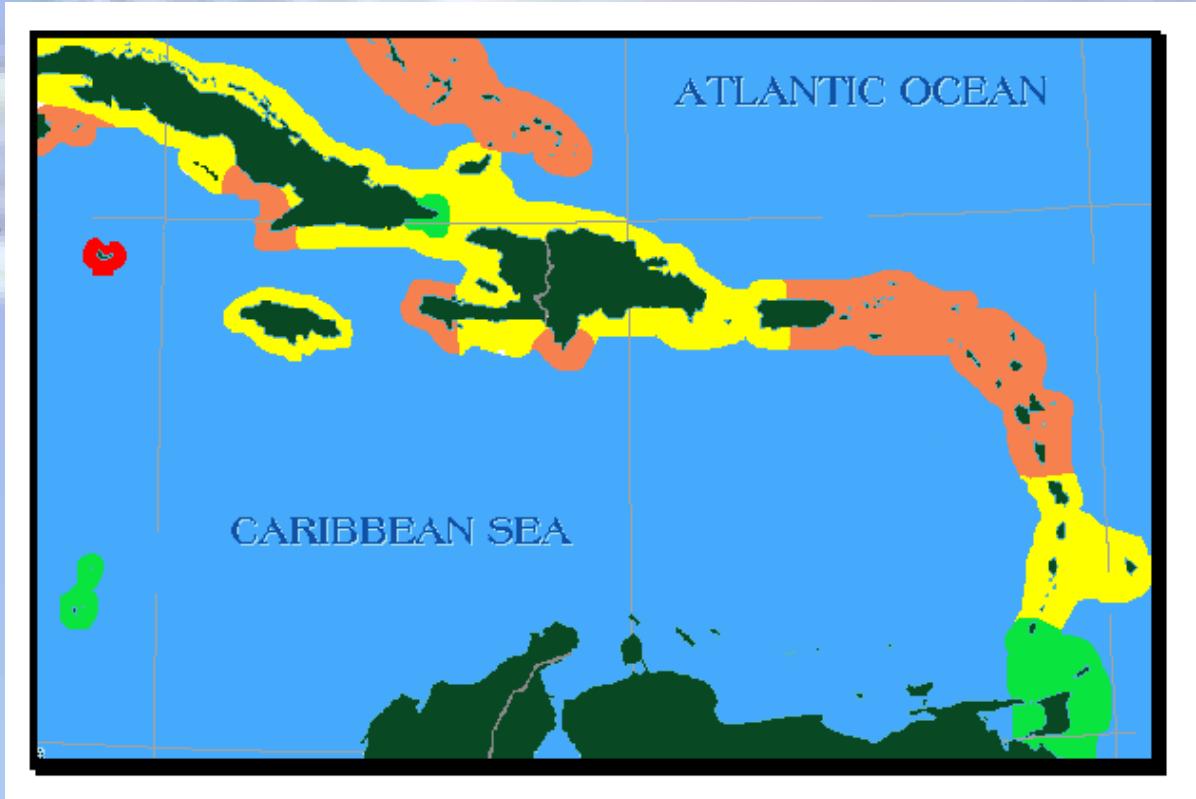
(Orange)

10-20

(Yellow)

< 10

(Green)





Saffir-Simpson Hurricane Scale

- Category rating (1-5) is based on sustained winds
- Represents hurricane's current intensity
- Categories 3-5 are considered intense hurricanes
- Provides estimate of potential property damage & flooding
 - expected in landfall area
- Storm surge estimates depend upon slope of continental shelf

THE SCALE in the landfall region

SUSTAINED WIND (mph)	< 39	39	75	96	111
131	155	DEPRESSION	STORM	CAT 1	CAT 2
				CAT 3	CAT 4
STORM SURGE (ft)	4-5	6-8	9-12	13-18	>18



The “Intense” Hurricanes

Category 3

Sustained winds 111-130 mph

Storm surge generally 9-12 ft above normal

**Hurricanes Roxanne of '95, Fran of '96, Bonnie of '98, Isidore of '02,
Alex and Jeanne of '04**

Category 4

Sustained winds 131-155 mph

Storm surge generally 13-18 ft above normal

**Hurricanes Felix and Opal of '95, Hortense of '96, Bret, Cindy, Floyd and
Lenny of '99, Lili of '02, Charley, Frances and Karl of '04**

Category 5

Sustained winds greater than 155 mph

Storm surge generally greater than 18 ft above normal

Hurricane Ivan of 2004 Max Winds 167 MPH

Hurricane Isabel of 2003 Max Winds 165 MPH

**Hurricane Mitch of 1998 - strongest October Atlantic tropical cyclone on
record**

**12 Hurricane Gilbert of 1988 - the strongest Atlantic tropical cyclone on
record**



2004 Atlantic Basin Hurricane Summary

2004

	<u>AVERAGE</u>	
Named Storms		14
10		
Hurricanes		10
6		

Five Named Tropical Cyclones had some effect on the United States
Intense Hurricanes (Category 3, 4, or 5) 6

● The “Big Six” of 2004

<u>Name</u>	<u>Dates</u>	<u>Area(s) Most Affected</u>	<u>Damage (in US \$)</u>		
Direct Deaths					
Alex	31 Jul-6 Aug	North Carolina Outer Banks	05	Million	01
Charley	9-13 Aug	South West Fla Coast	14	Billion	35
Frances	27 Aug-9 Sep	East Fla Coast	09	Billion	49
Ivan	2 - 24 Sep	Fla Western Panhandle	15	Billion	94
Jeanne	13-28 Sep	Central Fla East Coast	6.9	Billion	06
Karl	16-14 Sep	Central Open North Atlantic			



Dr. Gray's 2005 Atlantic Basin Forecast

	<u>2005</u>	<u>AVERAGE</u>
Named Storms	11	9.6
Hurricanes	6	5.9
Intense Hurricanes (Category 3, 4, or 5)	3	2.3

- A slightly above-average hurricane season for the Atlantic basin in 2005. Also, an above-average probability of U.S. major hurricane landfall is anticipated.
- PROBABILITIES FOR AT LEAST ONE MAJOR (CATEGORY 3-4-5) HURRICANE LANDFALL ON EACH OF THE FOLLOWING COASTAL AREAS:
 - 1) Entire U.S. coastline - 69% (average for last century is 52%)
 - 2) U.S. East Coast Including Peninsula Florida - 49% (average for last century is 31%)
 - 3) Gulf Coast from the Florida Panhandle westward to Brownsville - 39% (average for last century is 30%)
 - 4) Above-average major hurricane landfall risk in the Caribbean



Dr. Gray's forecast probability of a major Hurricane (winds faster than 111 mph) hitting the U.S. Coast

Location	in 2004.		Century Average
	2005	2004	
U.S.	69%	52%	
Coastline East Coast and Florida	49%	31%	
Gulf Coast	39%	30%	

Source: Colorado State University



2005 Atlantic Basin Tropical Cyclone Names

Arlene

Bret

Cindy

Dennis

Emily

Franklin

Gert

Harvey

Irene

Jose

Katrina

Lee

Maria

Nate

Ophelia

Philippe

Rita

Stan

Tammy

Vince

Wilma



Hurricane Briefing Sources

- **The Deadliest Atlantic Tropical Cyclones, 1492-1996,**
Prepared by Edward N. Rappaport and Jose Fernandez-Partagas
28 May 1995 NOAA Technical Memorandum NWS NHC 47
updated 22 April 1997 by Jack Beven
- **The Deadliest, Costliest, and Most Intense United States Hurricanes from 1900 to 2000 (and other frequently requested hurricane facts)**
by Jerry D. Jarrell(retired), Max Mayfield, and Edward N. Rappaport
NOAA/NWS/ Tropical Prediction Center Miami, Florida ,Christopher W. Landsea
NOAA/AOML/Hurricane Research Division Miami, Florida
- **The National Hurricane Center**
- **Dr. William Gray, Colorado State University, Department of Atmospheric Science**

Hurricane Links
National Hurricane Center
2012 WeatherTropical Prediction Center

**Hurricane Season is 1 June
through 30 November**